

WATER LEVELS IN THE UPPER FLORIDAN AQUIFER IN THE COASTAL AREA OF GEORGIA, 1990-98

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REFERENCE: *Proceedings of the 1999 Georgia Water Resources Conference*, held March 30-31, 1999, at the University of Georgia. Kathryn J. Hatcher, editor, Institute of Ecology, University of Georgia, Athens, Georgia.

Abstract. Pumpage from the Upper Floridan aquifer—the principal source of water in the 24-county coastal area of Georgia (fig. 1)—has steadily increased during the last 100 years, resulting in regional water-level declines and saltwater intrusion in parts of the coastal area. To monitor seasonal and long-term water-level fluctuations and trends in the Upper Floridan

aquifer in coastal Georgia, the U.S. Geological Survey, in cooperation with the Georgia Department of Natural Resources, and other State and local agencies, operates a network of approximately 514 water-level monitoring wells completed in the Upper Floridan aquifer in the coastal area, 30 of which are equipped with continuous water-level recorders.

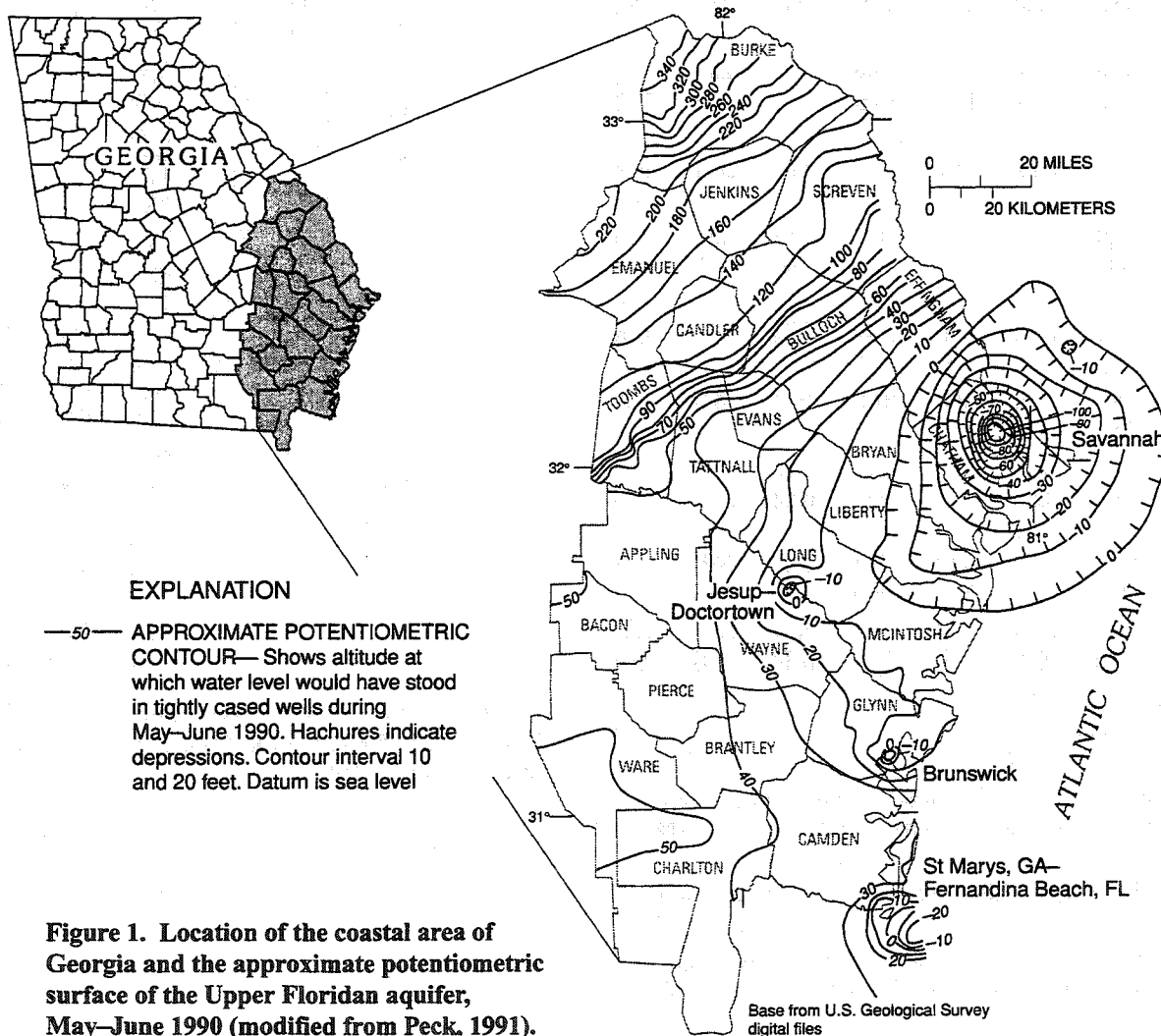


Figure 1. Location of the coastal area of Georgia and the approximate potentiometric surface of the Upper Floridan aquifer, May-June 1990 (modified from Peck, 1991).

During 1997, about 347 million gallons per day (Mgal/d) of water was withdrawn from the Upper Floridan aquifer in the coastal area (Julia L. Fanning, U.S. Geological Survey, written commun., 1999). Major pumping centers (fig. 1) are located at Savannah, Jesup–Doctortown, Brunswick, and St. Marys, Ga.–Fernandina Beach, Fla., where pumpage is primarily for industrial supply, except in the Savannah area where pumpage is evenly distributed between industrial and public supply (Clarke, 1987). This pumpage has a pronounced effect on the configuration of the potentiometric surface and on the ground-water level in the Upper Floridan aquifer in the coastal area. The potentiometric surface is characterized by four large cones of depression (fig. 1) resulting from local and regional pumping (Peck, 1991).

The water level in the coastal area generally was higher in May 1998 than in May 1990 (fig. 2), corresponding to a decrease in pumpage from about 369 Mgal/d in 1990 to 346 Mgal/d in 1997 (Julia L. Fanning, U.S. Geological Survey, written commun., 1999). Water levels in 248 wells ranged from about the same to 12.1 feet (ft) higher in May 1998 than in May 1990; the median water-level change was about 5.5 ft higher (fig. 3).

The water level in the Savannah area generally rose during 1990–98, corresponding to decreased pumpage from the Upper Floridan aquifer. Pumpage decreased from about 88 Mgal/d in 1990, to 76 Mgal/d in 1997 (Julia L. Fanning, U.S. Geological Survey, written commun., 1999). Water levels in 46 wells ranged from about the same to 14.2 ft higher in May 1998 than in May 1990; the median water-level change was about 4 ft higher (fig. 3).

The water level in the Jesup–Doctortown area generally rose during 1990–98, corresponding to decreased pumpage from the Upper Floridan aquifer. Pumpage decreased from about 70 Mgal/d in 1990, to 64 Mgal/d in 1997 (Julia L. Fanning, U.S. Geological Survey, written commun., 1999). Water levels in 42 wells ranged from about 0.8 to 16 ft higher in May 1998 than in May 1990; the median water-level change was about 4.9 ft higher (fig. 3).

The water level in the Brunswick area generally rose during 1990–98, corresponding to decreased pumpage from the Upper Floridan aquifer. Pumpage decreased from about 85 Mgal/d in 1990, to 65 Mgal/d in 1997 (Julia L. Fanning, U.S. Geological Survey, written commun., 1999). Water levels in 78 wells ranged from about 4.2 to 12.1 ft higher in May 1998 than in May 1990; the median water-level change was about 7.1 ft higher (fig. 3).

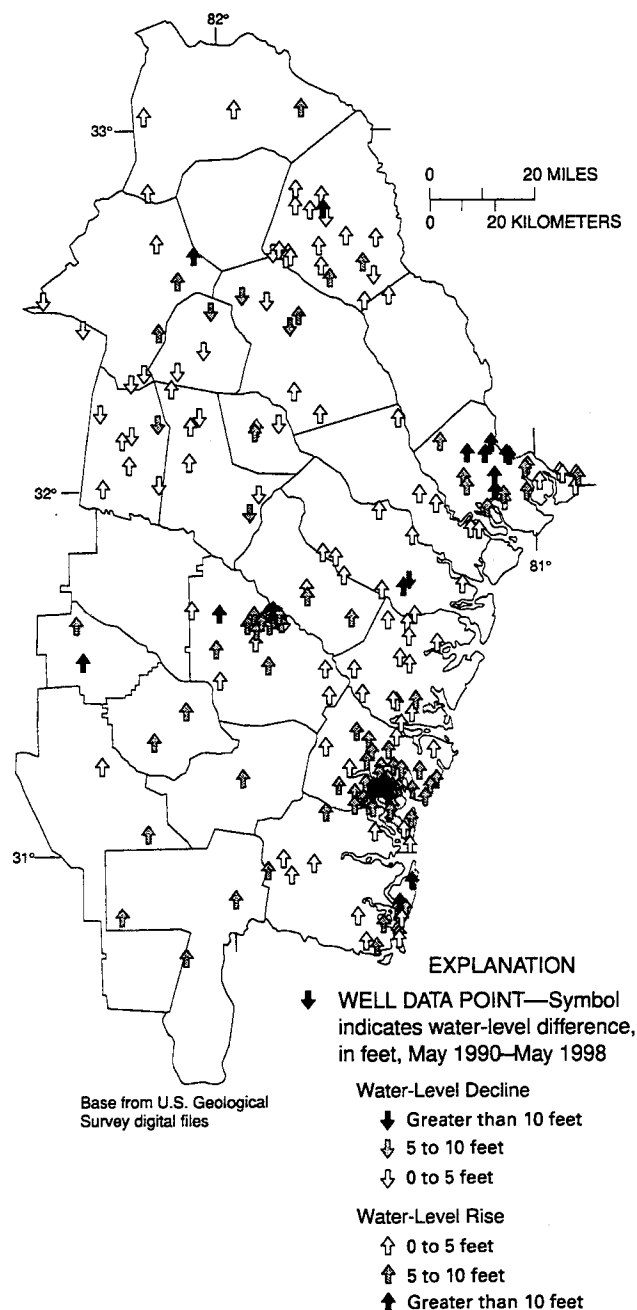


Figure 2. Ground-water-level trends in the Upper Floridan aquifer in the coastal area of Georgia, May 1990–May 1998.

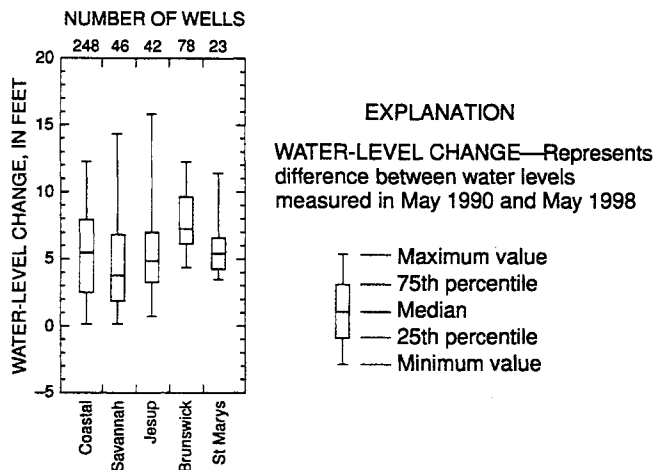


Figure 3. Water-level change in the Upper Floridan aquifer in the coastal area of Georgia, May 1990–May 1998.

The water level in the St. Marys, Ga.–Fernandina Beach, Fla., area generally rose during 1990–98, although pumpage in Camden County increased from about 38 Mgal/d in 1990 to 40 Mgal/d in 1998 (Julia L. Fanning, U.S. Geological Survey, written commun., 1999). Water levels in 23 wells ranged from about 3.5 to 11.1 ft higher in May 1998 than in May 1990; the median water-level change was about 5.2 ft higher (fig. 3).

LITERATURE CITED

- Clarke, J.S., 1987, *Potentiometric surface of the Upper Floridan aquifer in Georgia, May 1985, and water-level trends, 1980–85*: Georgia Geologic Survey Hydrologic Atlas 16, scale 1:1,000,000, 1 sheet.
- Peck, M.F., 1991, *Potentiometric surface of the Upper Floridan aquifer in Georgia and adjacent parts of Alabama, Florida, and South Carolina, May–June 1990*: U.S. Geological Open-File Report 91-206, 3 p.